

INTERNATIONAL  
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ISO  
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IULTCS/IUP  
44

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**Leather — Physical and mechanical  
tests — Measurement of stitch tear  
resistance**

*Cuir — Essais physiques et mécaniques — Mesurage de la résistance  
à l'arrachement au point de couture*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 23910/IUP 44 was prepared by the Physical Tests Commission of the International Union of Leather Technologists and Chemists Societies (IUP Commission, IULTCS) in collaboration with the European Committee for Standardisation (CEN) Technical Committee CEN/TC 289, *Leather*, the secretariat of which is held by UNI, in accordance with the agreement on technical co-operation between ISO and CEN (Vienna Agreement). It is based on IUP 44 originally published in *J. Soc. Leather Trades Chemists*, **84**, p. 409, 2000 and declared official methods of the IULTCS in 2001.

IULTCS, originally formed in 1897, is a world-wide organization of professional leather societies to further the advancement of leather science and technology. IULTCS has three Commissions, which are responsible for establishing international methods for the sampling and testing of leather. ISO recognizes IULTCS as an international standardizing body for the preparation of test methods for leather.

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# Leather — Physical and mechanical tests — Measurement of stitch tear resistance

## 1 Scope

This International Standard specifies a method for determining the stitch tear resistance of leather. It can be used on all leathers, but is particularly suitable for leathers over 1,2 mm in thickness.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2418, *Leather — Chemical, physical and mechanical and fastness tests — Sampling location*

ISO 2419, *Leather — Physical and mechanical tests — Sample preparation and conditioning*

ISO 2589, *Leather — Physical and mechanical tests — Determination of thickness*

ISO 7500-1:2004, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

## 3 Principle

A leather test piece is pulled against a mandrel of specified shape and dimensions inserted through a slit in the leather and the force required to tear the leather is recorded.

## 4 Apparatus

### 4.1 Tensile testing machine, with:

- a force range appropriate to the specimen under test;
- a means of recording the force as specified by Class 2 of ISO 7500-1:2004;
- a uniform speed of separation of the jaws of 100 mm/min  $\pm$  20 mm/min;
- jaws, with a minimum length of 30 mm in the direction of the applied load, designed to apply constant clamping by mechanical or pneumatic means. The texture and design of the inside faces of the jaws shall be such that, at the maximum load attained in the test, the specimen does not slip at either jaw.

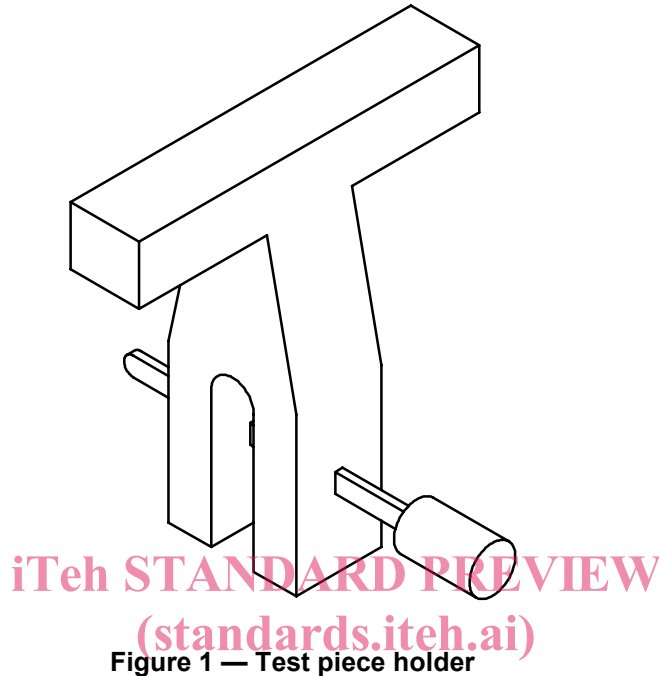
#### 4.1.1 Metal test piece holder, of the shape shown in Figure 1.

NOTE Figure 1 shows the test piece holder with the mandrel (4.1.2) in place.

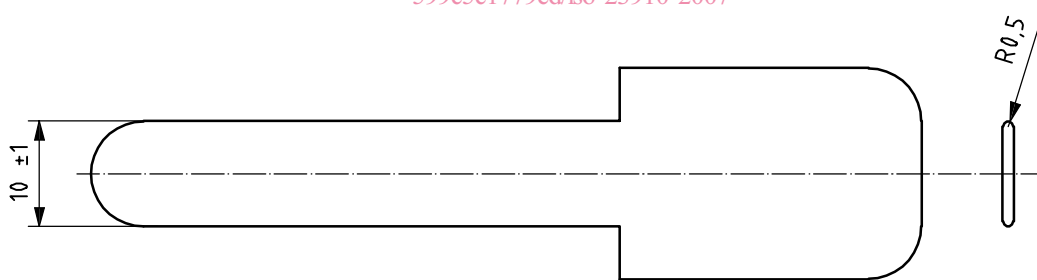
4.1.2 **Metal mandrel**, of the shape and dimensions shown in Figure 2.

4.2 **Thickness gauge**, as specified in ISO 2589.

4.3 **Press knife**, the inner wall of which is a rectangle  $20\text{ mm} \pm 1\text{ mm} \times 50\text{ mm} \pm 1\text{ mm}$ , conforming to the requirements of ISO 2419.



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Dimensions in millimetres



## 5 Sampling and sample preparation

5.1 After conditioning in accordance with ISO 2419, sample in accordance with ISO 2418. Cut six test pieces by applying the press knife (4.3) to the grain surface. Cut three test pieces with the longer edge parallel to the backbone and three with the longer edge perpendicular to the backbone.

NOTE If there is a requirement for more than two hides or skins to be tested in one batch, then only one sample in each direction need be taken from each hide or skin, provided that the overall total is not less than three test pieces in each direction.

5.2 Condition the test pieces in accordance with ISO 2419.

## 6 Procedure

- 6.1** Measure the thickness of the test piece in accordance with ISO 2589 at a single point on each of the test pieces. This measurement should be taken at a point approximately 10 mm from the cut end of the slit. (See Figure 3.)
- 6.2** Grip the upper end of the metal test piece holder (4.1.1) in the upper jaws of the tensile testing machine.
- 6.3** Place the perforated end of the test piece between the arms of the test piece holder and pass the mandrel (4.1.2) through both the holes in the test piece holder and the slit in the test piece.
- 6.4** Clamp the free end of the test piece in the lower jaws of the tensile testing machine.
- 6.5** Run the tensile test machine until the test piece is torn apart and record the force, in newtons, required to initiate tearing and the maximum force, in newtons, recorded during the tearing.

Dimensions in millimetres

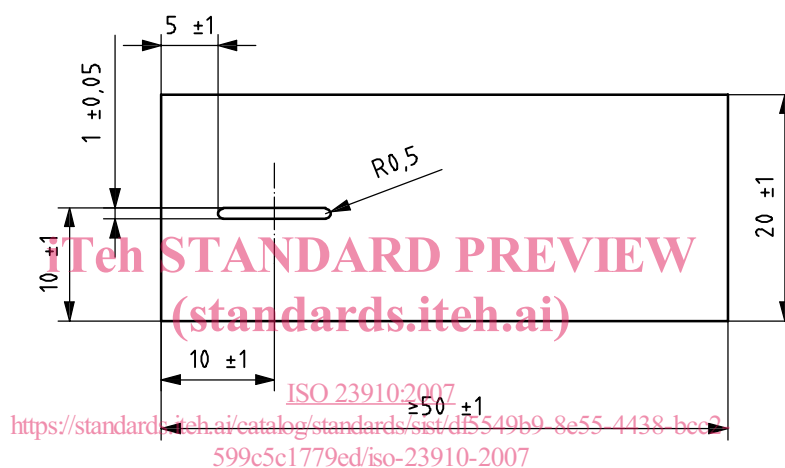


Figure 3 — Test piece for stitch tear

## 7 Test report

The test report shall include the following:

- a reference to this International Standard;
- the thickness of the leather, in millimetres;
- the maximum force recorded, in newtons;
- the standard atmosphere used for conditioning and testing as given in ISO 2419 (i.e. 20 °C/65 % RH or 23 °C/50 % RH);
- any deviations from the method specified in this International Standard;
- full details for identification of the sample and any deviation from ISO 2418 with respect to sampling.

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